

REMARKS

This responds to the Office Action mailed on July 27, 2005.

Claims 25, 30, 38 and 40 are amended, no claims are canceled, and no claims are added; as a result, claims 10-38 and 40 are now pending in this application.

§112 Rejection of the Claims

Claims 30-32 were rejected under 35 U.S.C. § 112, first paragraph, as lacking adequate description or enablement. Applicant respectfully traverses this rejection.

The specification describes the increased area of the doping region of the collector (local implant) at least at page 1, line 8; page 2, line 8; page 4, lines 15-17 and line 24; and page 5, line 21, as compared to the emitter region. This is shown in Fig. 12 where the emitter 1114 is substantially smaller than the local implant collector 1020, which is in turn substantially smaller than the base area 918. On page 4 of the specification, it states that “collector implant 1020 at the collector-base horizontal junction which is wider than the emitter opening 1014 and the eventual emitter” and that “the collector implant is greater than the surface area of the emitter opening, but less than the area of the base”. Similar language is used on page 5 of the specification, and Fig. 10 makes it clear that the implant region 1020 is roughly twice as large as the emitter opening 1014. Thus, Applicant respectfully submits that one of ordinary skill in the art would understand that the local implant results in “... *the area of the collector region having an effective surface area in contact with the base region that is at least one fifth greater than the surface area of the emitter...*”, as recited in none amended claim 30.

However, in order to move the prosecution of this application forward expeditiously, Applicant has amended claim 30 to recite “...*the area of the collector region having an effective surface area in contact with the base region that is substantially greater than the surface area of the emitter and substantially smaller than the surface area of the base region ...*”, which is held to be supported by the specification as discussed above. The local implant 1020 is clearly shown as substantially larger than the emitter opening 1014. In view of the above noted claim amendment, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

§102 Rejection of the Claims

Claims 25-32, 38, and 40 were rejected under 35 U.S.C. § 102(b) for anticipation by Grubisich (U.S. 5,581,115). Applicant respectfully traverses this rejection.

Applicant submits that the cited reference fails to disclose at least the claimed features of “...an implant region intermediate the base and the collector, the implant region having an implant surface area in contact with the intrinsic base and not in contact with the extrinsic base, the implant surface area being greater than the emitter surface area and less than the intrinsic base surface area ...”, as recited in claim 25, as amended herein. The outstanding Office Action states on page 3 that Grubisich in figure 2 discloses “an implant region 58 intermediate the base and the collector, the implant region having an implant surface area in contact with the intrinsic base, the implant surface area being greater than the emitter surface area and less than the intrinsic base surface area”. Applicant notes that the text at col. 4, line 57- col. 5, line 12, referring to Figure 2 shows that the regions 54 have higher doping levels (i.e., are extrinsic base areas) than the intrinsic base 52 (col. 5, line 1) and the separation of the extrinsic and intrinsic base area 54 and 52 are shown by the dash directly above the edges of the collector implant region 58. Thus, the cited reference fails to anticipate the non amended claim reciting that the implant is “...less than the intrinsic base surface area ...”, because the region 58 is larger than the intrinsic base 52 as described and shown. The cited reference further fails to anticipate the amended claim reciting that the implant is “...not in contact with the extrinsic base ...”, since the region 58 is in contact with the extrinsic base 54. Thus, Applicant submits that amended claim 25 is patentable over the cited reference. Dependent claims 26 to 29 are held to be patentable at least as depending from a base claim shown above to be patentable over the cited reference.

Applicant respectfully submits that the cited reference fails to disclose at least the claimed features of “... a base region having an impurity of the second conductivity type doped at a generally constant doping level across a surface thereof ...”, as recited in claim 30, as amended herein. The cited base region does not have a generally constant doping level across a surface thereof, since the doping level at the top surface is stated at col. 4, line 44 – 45, to have “additional base dopant, typically by outdiffusion from overlying polysilicon”, and the doping at the bottom surface in contact with the collector 42 is also shown as being differently doped and

forming two different regions 52 and 54 respectively. Thus, Applicant submits that amended claim 30 is patentable over the cited reference. Dependent claims 31 and 32 are held to be patentable at least as depending from a base claim shown above to be patentable over the cited reference.

Applicant respectfully submits that the cited reference fails to disclose at least the claimed features of “...*the region including a first surface in contact with the second portion of the base and not in contact with the first portion of the base* ...”, as recited in claims 38 and 40, as amended herein. The cited reference has the implant region in direct contact with the more heavily doped second portion of the base region. Thus, Applicant submits that amended claims 38 and 40 are patentable over the cited reference.

In view of the above noted claim amendment, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

§103 Rejection of the Claims

Claims 17-24 and 34-37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Grubisich. Applicant respectfully traverses this rejection.

The outstanding Office Action states on page 6 that “Grubisich discloses in Figure 5a, an implant region 90 in the BJT shown in the figure”. Applicant is unable to discover where in the cited reference it suggests that the collector contact region 90, shown in Figure 3a, Figure 4 and Figure 5, is an implant. Applicant respectfully submits that the region 90 is “a heavily doped n-type collector contact region 90” (col. 10, lines 16-17) and is formed by diffusion, as compared to the medium doped special collector region 88 formed by implantation. Applicant respectfully submits that since the regions have different levels of doping (i.e., n type versus n⁺ type) that they are not formed by the same process. Thus, Applicant submits that the cited reference does not disclose the second implant, and claims 17-24 and 34-37 are patentable over the cited reference, whether taken alone or in any combination with other well known references.

In view of the above discussion regarding the difference in formation methods and resulting structure, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

Allowable Subject Matter

Claims 10-16 and 33 were allowed. Applicant thanks the Examiner for the indication of allowable subject matter.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney David Suhl at (508) 865-8211, or Timothy B Clise at (612) 349-9587 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

MICHAEL P. VIOLETTE

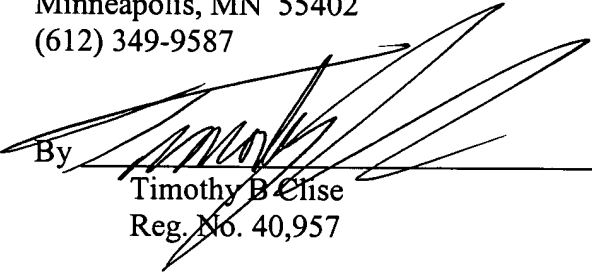
By his Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(612) 349-9587

Date

20 Sept '05

By


Timothy B Clise
Reg. No. 40,957

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop AF, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 26 day of September, 2005.

KACIA LEE

Name

Kacia Lee

Signature